

Drawings are important documents, and should be carefully looked after.

Drawings and their functions

To enable construction methods and ideas for building to be carried out, these are first set down as drawings, and, together with a specification, become the instructions for the different trades to follow without the need for further referral.

Completed drawings and specifications must be approved by the local council before work is begun. Drawings must be in a standard format for accurate interpretation by builders and tradespeople from any area or background.

Drawings can be divided into two groups:

- 1 those giving a pictorial representation of the project as design drawings;
- 2 those best described as working drawings.

Pictorial representation

The first type are used by architects and designers to determine, with the client, the final design or appearance of the project. A perspective view (Figure 6.3), or pictorial representation (Figure 6.4), is often used to assist in visualising the object (the faces or sides of the object appear to taper away or recede to a vanishing point). Parallel lines seem to converge, as is the effect when viewing railway tracks in the distance.

Perspective drawings are the closest to what the eye would see, and are often used by builders to present a project for sale.

Isometric projection (Figure 6.5) is also a pictorial view, with lines drawn parallel to the axis at 30° because of the ease in using 60°–30° set

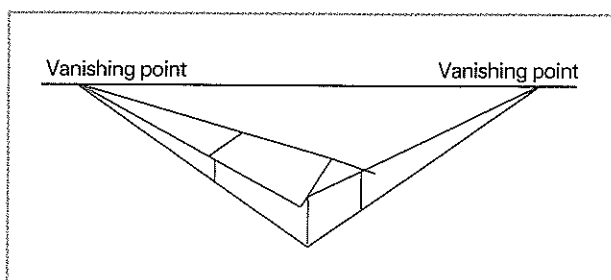


Figure 6.3 Perspective view

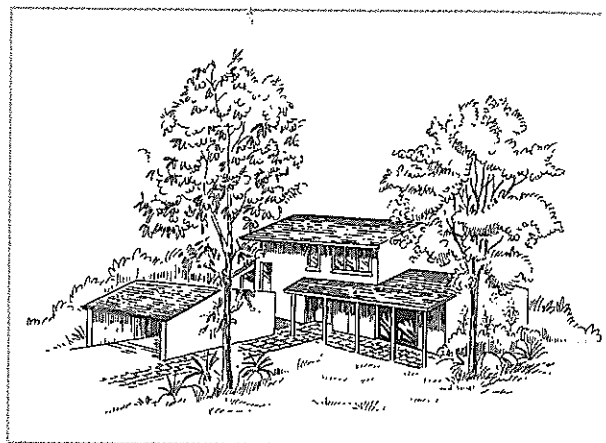


Figure 6.4 Pictorial representation

squares. Perspective view and isometric projection are used as working or freehand sketches for ease of interpretation of house design or building construction technique.

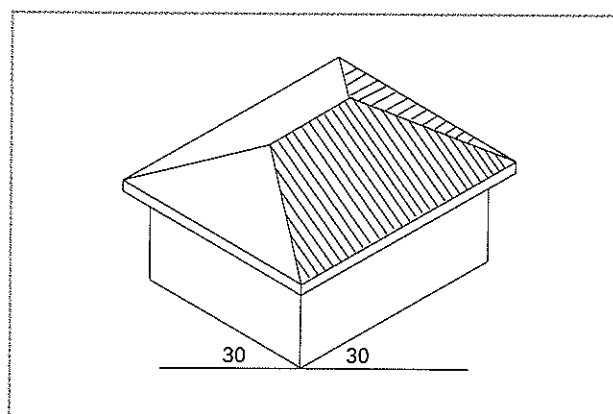


Figure 6.5 Isometric projection

Working drawings

Working drawings are produced so that users may:

- gain an overall picture of the layout and shape of the building;
- determine setting-out dimensions for the building as a whole;
- locate and identify the spaces and parts of the building, e.g. rooms, doors, cladding panels, drainage;
- pick up references leading to more specific information, particularly about junctions between parts of the building.

A basic form of working drawing is orthographic projection (single angle), which consists of three related views—plan, elevation, and section—to give a complete understanding of the building.

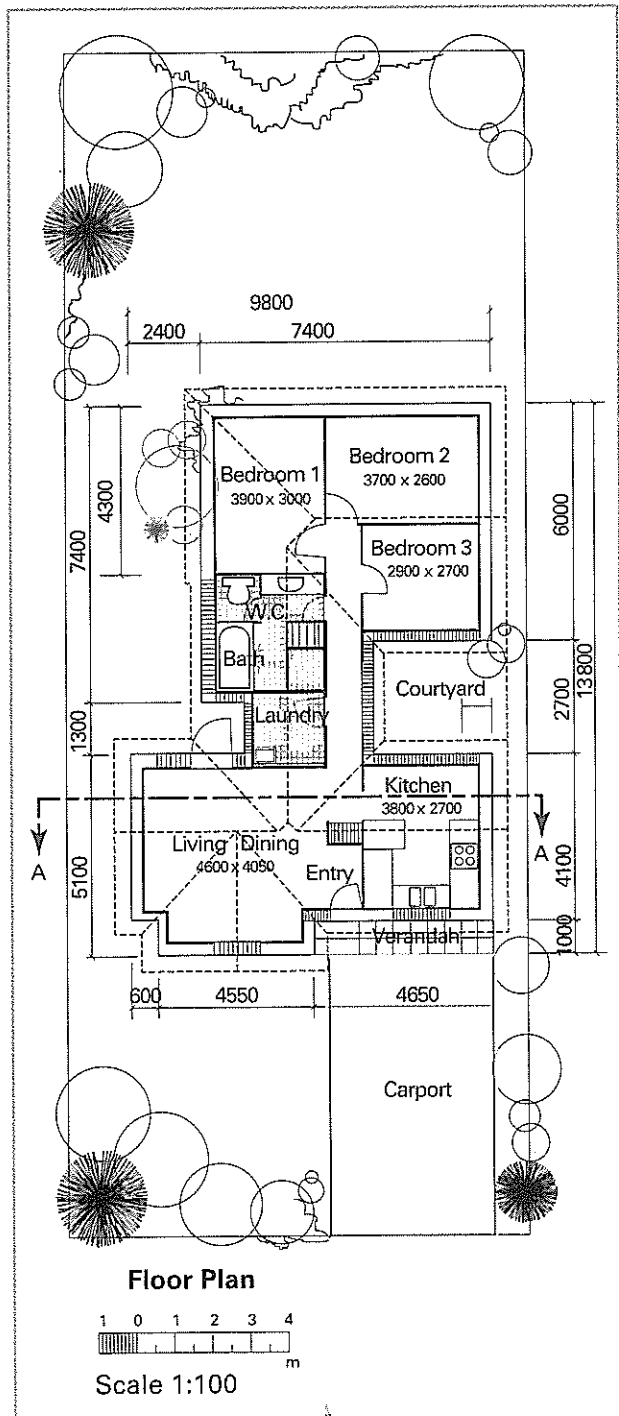


Figure 6.6 Typical floor plan

Floor plan

The floor plan is a horizontal section of the building as viewed from above and is the more important of the related views, as it contains most of the information for construction (Figure 6.6).

Items shown on a floor plan would include:

- overall dimensions to the outside of the walls;
- door and window positions and opening sizes;
- thickness of external and internal walls;
- internal room dimensions;
- position of cupboards, stoves, laundry tubs etc.;
- function of each room, such as kitchen, bedroom;
- floor surface and type of floor covering;
- position and direction from which section lines are taken for sectional elevations.

Elevation

Elevations provide information relating to vertical measurements and external finishes. Each view is identified according to the direction it faces, in

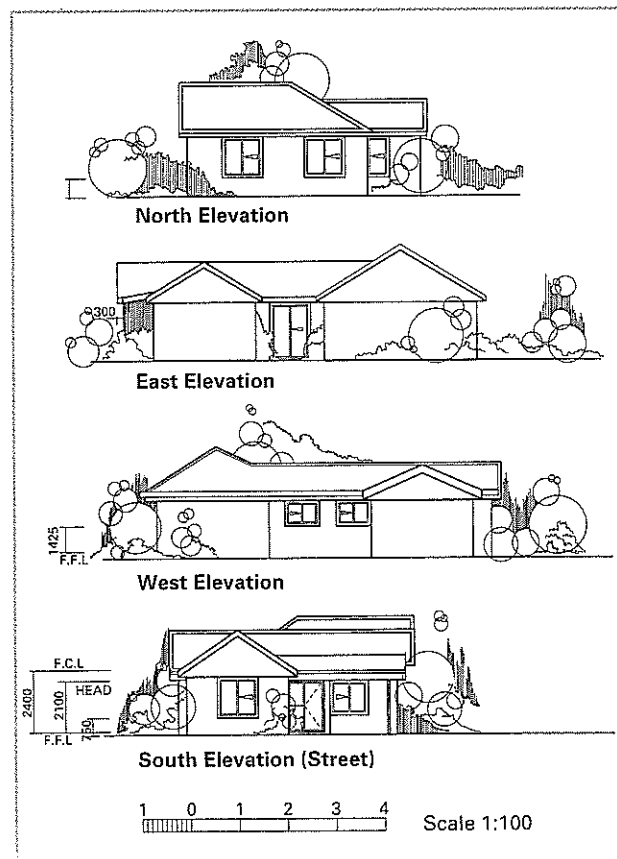


Figure 6.7 Typical details of elevations

relation to the points of the compass, based on the north point shown on the site plan.

Elevations give a projection of the building at right angles, and show:

- height of finished floor level (FFL) to finished ceiling level (FCL);
- design of the building;
- roof shape and width of roof overhang;
- position of doors and windows;
- window sill height above floor level;
- type or function of windows;
- roof covering and slope;
- floor height above ground;
- finish to external walls.

Standard working drawings in orthographic projection generally require a minimum of two elevations—the front and side of the building—thus enabling correct interpretation of design. Typical information may be indicated on one or both elevations (Figure 6.7).

Sections

Section drawings are elevations cut through the building in the position and direction indicated on the floor plan. The section is a cross-section from the bottom of the footings, through walls, ceilings and roof structure (Figure 6.8). Sections give information such as:

- footing sizes;
- wall thickness and construction;
- design of sub-floor;
- floor construction;
- roof construction, e.g. trussed;
- roof pitch;
- section sizes and spacing of structural members.

Other information to be shown on working drawings includes:

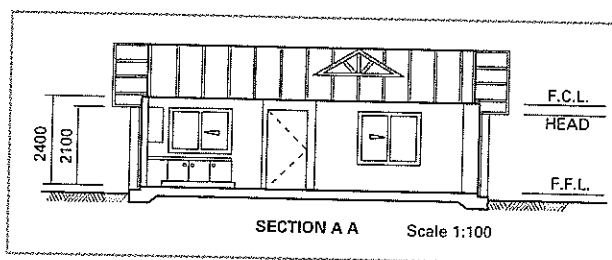


Figure 6.8 Typical section taken through kitchen and living/dining areas

- details;
- site or block plan;
- scales used for drawings.

Details

Details are sectional views drawn to a larger scale than sectional elevations, and detail specific requirements that cannot be drawn accurately to scale on sectional elevations (Figure 6.9).

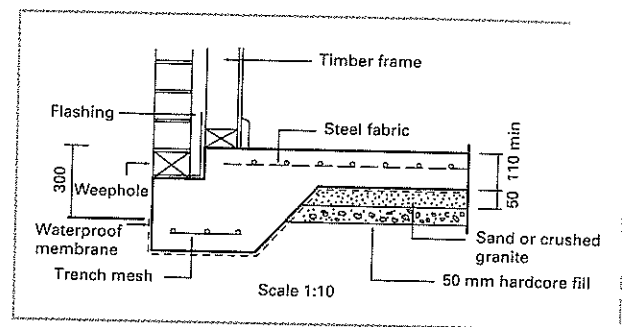


Figure 6.9 Slab edge detail

Site or block plan

Site or block plans are essential for determining the location of the building on the building block. Information contained on a site (Figure 6.10) or block plan would be:

- boundary dimensions of the block;
- distance from street to boundary;
- set-back distance from front boundary to building line;
- distance from side boundary to building;
- contour lines and their height;
- position of paths and driveways;
- trees;
- direction of north;
- lot number.

Special details

These details may include:

- a site plan to indicate landscaping details;
- details of retaining walls;
- a site layout plan for storage of materials and environmental compliance/water drainage etc.;
- large-scale details of special construction requirements; and so on.

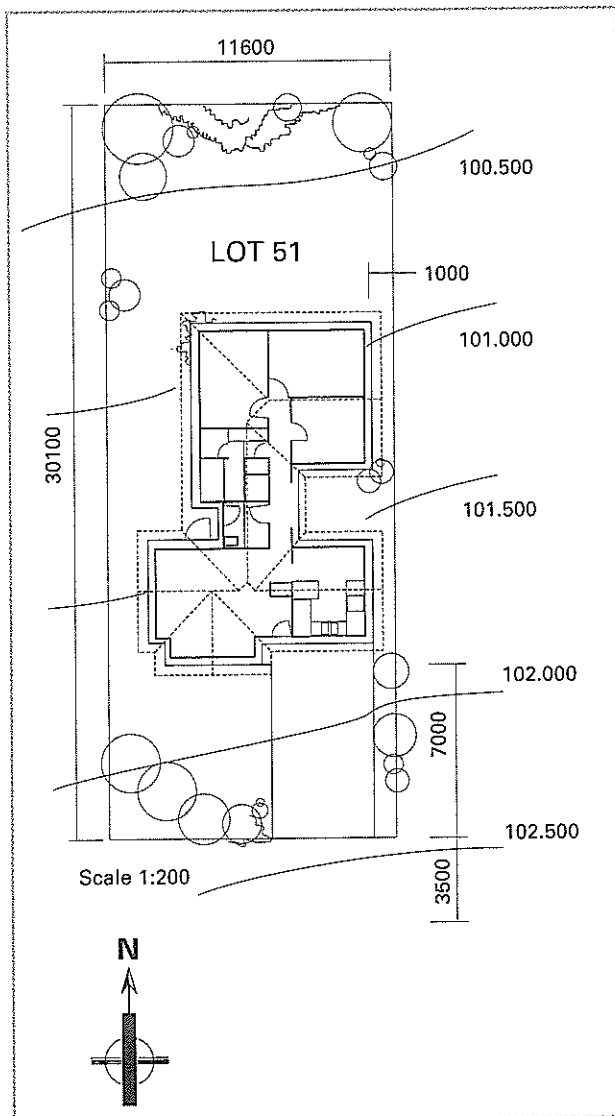


Figure 6.10 Typical site plan

Scale drawings

A scale drawing is the reduction of a full-sized object to a suitable scale to enable its reproduction on drawing sheets. Working drawings state the scale or scales that have been used on the drawing. However, in some cases there is also a warning to the effect that all measurements should be taken as read from the drawing, rather than determining lengths using scale rules.

A scale of 1:50 (Figure 6.11) indicates that the drawing is reduced to 50 times smaller than full size.

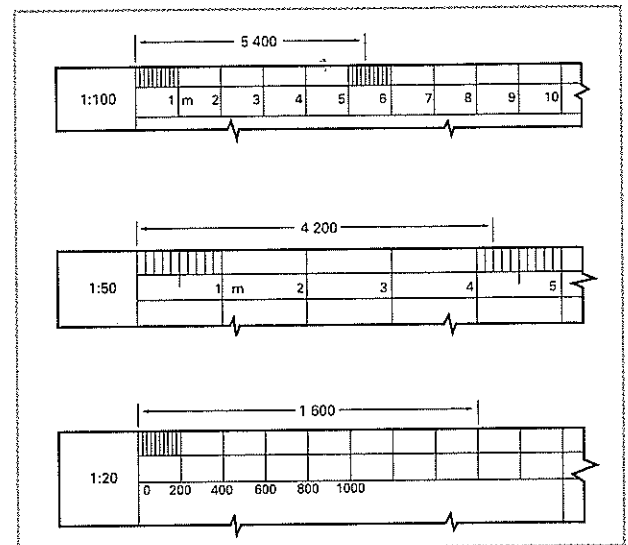


Figure 6.11 Common reduction scales

The following list shows standard scales adopted when producing working drawings.

Site plans	1:500	1:200
Plan views	1:100	
Elevations	1:100	
Sections	1:100	
Construction details	1:20	1:10 1:5

Calculating scales

When a scale rule with the appropriate scale cannot be found, or an unusual scale needs to be used, it may be necessary to make your own. This may be done simply by using a calculator and a rule with standard size millimetres or a scale of 1:1, which is full-size.

Example 4.1

Scale required = 1:25

Measurement to be scaled = 6.200 m.

Step 1 Change the measurement from metres to millimetres, i.e. 6.200 m, change to 6200 mm.

Step 2 Divide the millimetre measurement by the desired scale, i.e. $6200 \div 25 = 248$.

Therefore the 1:25 scaled measurement = 248 mm (full-size mm).

Example 4.2

Scale required = 1:75

Measurement to be scaled = 1.500 m.

Step 1 Change the measurement from metres to millimetres, i.e. 1.500 m, change to 1500 mm.

Step 2 Divide the millimetre measurement by the desired scale, i.e. $1500 \div 75 = 20$.

Therefore the 1:75 scaled measurement = 20 mm (full size mm).

Dimensions

Dimension lines on drawings enable scales to be used to determine lengths that are not shown. The forms of dimension lines vary (Figure 6.12), but all are shown as a line parallel to the drawing. Lines at right angles to the main line indicate the position at which the dimension is taken.

Drawing sheet sizes

Plans such as working drawings are produced to scale on standardised drawing sheets, which

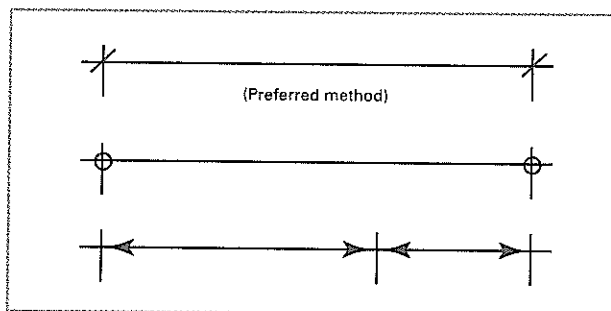


Figure 6.12 Examples of dimension lines

range in size from A0 (1189 × 841 mm) to A4 (210 × 297 mm), with margin or border lines and title blocks (Figure 6.13). The margins assist in the folding or filing of the plans, while the title block contains information essential to the project.

Title block

The title block on a set of plans for a house may contain a minimum of information, such as the name of the owners, the lot number and street number, street name, suburb, and scales used in the drawing (Figure 6.14).

The title block for a commercial project may contain:

- the name of the client or company for whom the project is to be constructed;
- the lot number and address of the project;
- scale or scales used on the plans, e.g. 1:100;
- numbers on the drawing sheets, if more than one is used, e.g. sheet 1 of 3;
- the name of the person or drafting service that has prepared the drawings;
- a filing system in the form of numbers or letters for use by the person who prepared the drawings;
- warnings (in some cases) against scaling from drawings to prevent incorrect measurement when using scales rather than using figured dimensions.

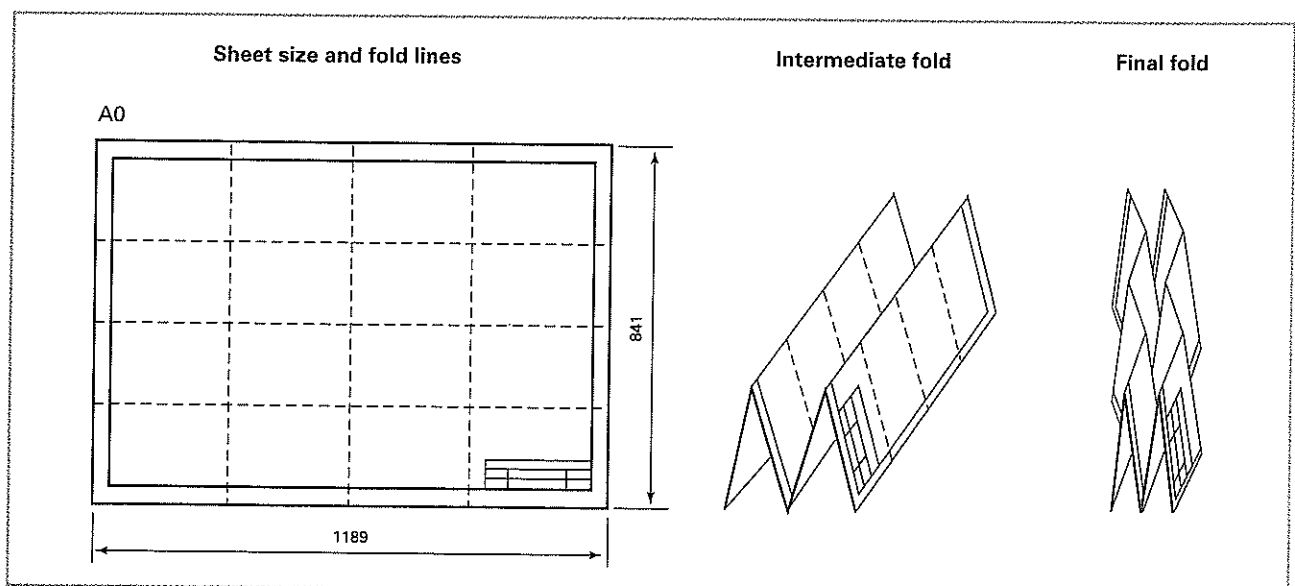


Figure 6.13 Typical drawing sheet size and format

Proposed dwelling for: Mr & Mrs B. Good, Lot 12 Aldgate St Prospect NSW 2149		
Scale: 1:100	Fly-by-night Builders, Lic. No: 4054	Sheet 1 of 3
Drawn by: R. Joven Date: Jan 2005	<ul style="list-style-type: none"> Do not scale off drawings All dimensions shown are theoretical only and are subject to site measure during construction. 	Job No: RJ 06/01/57

Figure 6.14 Typical title block showing required information

	<table> <tr> <th>Items</th> <th></th> </tr> <tr> <td>clothes lines</td> <td>see drawings ...</td> </tr> <tr> <td>letterboxes</td> <td>1 per dwelling</td> </tr> <tr> <td>shower screens</td> <td>see drawings</td> </tr> <tr> <td>bathroom cabinets</td> <td>minimum 1 per bathroom</td> </tr> <tr> <td>garage doors</td> <td>see drawings</td> </tr> </table>	Items		clothes lines	see drawings ...	letterboxes	1 per dwelling	shower screens	see drawings	bathroom cabinets	minimum 1 per bathroom	garage doors	see drawings
Items													
clothes lines	see drawings ...												
letterboxes	1 per dwelling												
shower screens	see drawings												
bathroom cabinets	minimum 1 per bathroom												
garage doors	see drawings												
	<p>05 CARPENTRY & JOINERY</p> <p>5.1 GENERALLY <i>Timber inspections and bandings:</i> Refer PRELIMINARIES—Materials and workmanship <i>NSW Timber Framing Manual:</i> The current edition of the NSW Timber Framing Manual may be used in lieu of AS 1684.</p> <p>5.2 MATERIALS <i>Timber stress grades:</i> The timbers used must comply with the Timber Marketing Act, and be graded to the appropriate SAA grading specification. <i>Timber Species:</i> Do not use tropical rainforest timbers. Refer to SCHEDULES— Schedule of Timber Species and Durability Rating.</p> <p><i>Preservative Treatment:</i> —All Lyctus susceptible sapwood in local rainforest timbers. —All Lyctus susceptible sapwood in hardwoods other than milled exceeding 20% of the perimeter of the piece. —All Lyctus susceptible sapwood in milled hardwood products. —Radiata pine used externally and for bearers and joists.</p> <p><i>Panel and sheet products:</i> <i>Plywood and Blackboard:</i> Interior use, type D: exterior use Type A. Use particle-board grades designated by the manufacturer to have moisture resistance appropriate to the conditions of use. Melamine surfaced particle-board shall be finished with melamine, surface bonded to all faces. <i>External cladding:</i> hardboard planks, fibre cement flat sheets, fibre cement planks. <i>Laminated plastic sheet:</i> Fix to background with contact adhesive.</p> <p>5.3 WORKMANSHIP <i>General:</i> Perform the operations and provide the accessories necessary for the completion of woodwork items. Ease and adjust moving parts, lubricate hardware, and leave the completed work in a sound, clean, working condition.</p> <p><i>Joinery:</i> —mortice and tenon joints in doors, frames, sashes and other parts. —mitre joints in mouldings, skirting, etc., but scribe internal angles —dress joinery stock and mouldings, hand finish exposed surfaces and remove arrises to provide smooth surface for painting. —all moulded runs of 800 mm and less must be in single lengths.</p> <p><i>Sizes and tolerances:</i> —Maximum possible tolerance for dressing to be 3 mm per face.</p> <p>Reference Specification for Detached Dwellings—Public Housing March 1994</p>												

To AS 1684/NSW TFM

To AS 1720. AS/NZS 1748.
Refer table in ASDC.

To AS 1604.
Obtain Superintendent's approval for treatment details.

To AS/NZS 1859.
Refer SAPPC.

Refer SAPPC.

To AS/NZS 2924, AS 2131.

To AS 1684.

Page 8

Figure 6.15 Extract from a standard Department of Housing specification